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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
TSAI, TSUNG YIN	
ART UNIT	**PAPER NUMBER**
2624	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/762,443	DALY ET AL.	
	Examiner	Art Unit	
	Tsung-Yin Tsai	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,5-12,15-20,22 and 24-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,5-12,15-20,22 and 24-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 January 2004* is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/30/2006, 6/14/2004,6/1/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Acknowledge of restriction election by the applicant on 6/28/2007 and made of record. Acknowledge of election of claims 1, 5-12, 15-20, 22 and 24-33 due to the distinct nature of the claims focus toward sieve filtering technique in modifying the image. Acknowledge of dismissal of claims 2-4, 13-14, 21, 23 and 34-60 due to their distinct nature of the claims focusing toward those that are different from sieve filtering technique in modifying the image.; these claims are cancel from the application.

Response to Arguments

Applicant's argument – Traverse of restriction.

Examiner's answer – The inventions are independent and distinct for the reason that the two inventions are different on that kinds of filters that are apply. Inspection of the two inventions discloses further diverse species of the filters that are apply for the process of image enhancement. Because there are so many filters that are use the examiner requires that the applicant narrow down their unique techniques of use of the particular filters of their invention.

Specification

1. The disclosure is objected to because of the following informalities:

(1) Application is missing a "Summary of Invention" in the specification. Please insert a "Summary of Invention" section in the proper section of the specification without the addition of new matter.

Appropriate correction is required.

Claim Rejections – 35 USC 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 10-12, 15-20 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al (US Patent Number 5,012,333) in view of Komatsu (US Patent Number 5,247,588).

(1) Regarding claims 1,10-12, 15 and 24:

Lee et al teaches regarding the subject matter:

modifying image of interest depth in such a manner that the higher frequency content with respect to the lower frequency content of said image is attenuated (figure 3 discloses the steps of attenuation of the low frequencies), and attenuating the lower amplitude content of said higher frequency content with respect to the higher amplitude content of said higher frequency content (figure 3 discloses the lower amplitude content of the higher frequency content from the result of summation of 110 which is further modify with edge sharpening and

noise suppression curves), and modifying said modified image based upon said modified image and said lower frequency content of said image (figure 3 discloses the result of the overall process from the summation of 150 and to the output image), artifacts (column 6 lines 55-60 disclose ringing artifacts, column 11 lines 10-20 discloses compression resulting in possible artifacts) and filters (figure 3 disclose low pass filters, column 4 lines 10-15 discloses where the low pass filter image/pixels are subtracted from the original image creating the high pass filter image).

Lee et al does not teach regarding first and second bit depth, where their difference of the first bit depth is larger then the second bit depth and where there is can be physical bit depth changes that represent the image.

However, Komatsu teaches regarding different bit depths (column 4 lines 35-45 disclose bit depth such as 12 for the first and 8 as the second, and where the first is larger than second. In processing the picture frame data we do see size of bit depth change).

It would have been obvious to one skill in the art at the time of the invention to employ Komatsu teachings to Lee et al regarding consideration of different bit depths. It is common that data storage, processing and display deal with data in different bit depths. Consideration for these different will enable the hardware to be flexible to deal with different incoming and outgoing data that have different bit depths.

The motivation to combine regarding bit depth to image enhancement beside the compatibly issue can also be that the averaging processing of the process will improve the S/N ratio for the final process image (column 4 lines 55-60).

(2) Regarding claims 16-20:

Lee et al teaches regarding dynamic range adjustment system for digital images, where the adjustment controlled by a mapping curve, which the user can manipulate interactively (abstract). The user can select the parameters to achieve the desired effect with precise control help with a high-speed computer/workstation inputting parameter from a keyboard and a mouse (column 1 lines 49-60).

Lee et al does not disclose expressly regarding where there is not change in physical bit depth that represent of the image, where the matter to perform image enhancement is free from conditional statement and additional noise. Further, where the process may use buffer that is smaller then the processing image by 100 percent or 30 percent.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art not to further change the original signal data during image enhancement; alteration of the original physical bit depth/signal will add to the image and change the image output with undesirable artifact. However, the focus of image enhancement is really depending on the user. User's desired enhancement of the image as a whole, or just a part of the image, is dependent

on the conditional statement/parameters that are input by the user. If the user desired no change than image processing with proceed free from conditional parameter inputs, but if the user desired enhancement of certain feature of the image then these parameter will be input by the user in ways of keyboard or mouse and the process carry out by the workstation. Depend on the parameter burden and the resources allocated by the user for the image processing the workstation will have limited buffer space free for processing of the image. Thus, depend on the user's parameter requirement, buffer space allocation of the workstation and the hardware limit of the buffer the workstation might process less than 100 percent of the incoming image or for a very burden workstation even less then 30 percent of the incoming data stream.

Applicant has not disclose that matter of not change in physical bit depth that represent of the image, where the matter to perform image enhancement is free from conditional statement or noise, where the process may use buffer that is smaller then the processing image by 100 percent or 30 percent, provides an advantage, is use for a particular purpose or solve a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with Lee et al in the conditions stated above.

Therefore, it would have been obvious to combine to one of ordinary skill in this art to modify Lee et al with to obtain the invention as specified in claims 16-20.

4. Claims 5-9 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al (US Patent Number 5,012,333) in view of Komatsu (US Patent Number 5,247,588) as applied to claim 1 above, and further in view of Dischert et al (US Patent Number 4,571,511).

(1) Regarding claim 5:

Lee et al and Komatsu teaches regarding:

wherein said attenuating the lower amplitude content of said higher frequency content with respect to the higher amplitude content of said higher frequency content (figure 3 discloses the lower amplitude content of the higher frequency content from the result of summation of 110 which is further modify with edge sharpening and noise suppression curves).

Lee et al and Komatsu does not teach regarding a coring function.

However, Dischert et al teaches regarding coring function (abstract, column 2 lines 20-35).

It would have been obvious to one skill in the art at the time of the invention to employ Dischert et al teaches to Lee et al and Komatsu regarding coring method for image enhancement. Coring method for image processing is a common use for reducing noise in 2-D images. Coring passes the high spatial frequency components of a noisy image through a non-linear means.

The motivation to combine regarding coring function for further image enhancement processing such that it will further reduce noise in the image (abstract, column 2 lines 20-35).

(2) Regarding claims 6-9:

Lee et al and Komatsu teaches regarding the subject matter above.

Lee et al and Komatsu does not teach regarding hard-threshold and transitional coring function, first derivative and where the coring function includes no discontinuity in actual value.

However, Dischert et al teaches regarding hard-threshold (figure 1b-c) and transitional (figure 7a discloses a transitional, figure 7B disclose a alternative) coring function, first derivative (figure 1b-c disclose the result of first derivative at location Vbe, figure 7) and where the coring function includes no discontinuity in actual value (figure 1b-c disclose continuation of actual values beyond that of Vbe).

It would have been obvious to one skill in the art at the time of the invention to employ Dischert et al teaching to Lee et al and Komatsu regarding hard-threshold and transitional coring function; such is the nature of the coring function.

The motivation regarding thresholds of the coring function is the nature of the coring function itself. Beside having just thresholds for reduction of noise for image enhancement (abstract, column 2 lines 20-35), this embodiment allows for

coring of binary signals selects varying thresholds parameters (column 2 lines 40-45) for different setting depend on the user.

(3) Regarding claim 22:

Lee et al and Komatsu teaches reducing noise in regions not proximate say edge (Lee et al. figure 3 summation of original signal and low pass filter will reduce noise of the lower frequencies that are not at edge).

Lee et al and Komatsu does not teach regarding reducing noise in regions proximate edge of the signal.

However, Dischert teaches regarding reducing noise in regions proximate edge of the signal (abstract, column 2 lines 20-35 discloses coring function where noise reduction on the regions proximately over the edge of the signal).

It would have been obvious to one skill in the art at the time of the invention to employ Dischert et al teaches to Lee et al and Komatsu regarding coring method for image enhancement. Coring method for image processing is a common use for reducing noise in 2-D images. Coring passes the high spatial frequency components of a noisy image through a non-linear means.

The motivation to combine regarding coring function for further image enhancement processing such that it will further reduce noise in the image (abstract, column 2 lines 20-35).

5. Claim 25-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al (US Patent Number 5,012,333) in view of Komatsu (US Patent Number 5,247,588)

as applied to claim 24 above, and further in view of Dewaele (US Patent Number 5,986,279).

(1) Regarding claims 25-33:

Lee et al and Komatsu teaches regarding artifacts (column 6 lines 55-60 disclose ringing artifacts which is also seen as contouring, column 11 lines 10-20 discloses compression resulting in possible artifacts) and filters (figure 3 disclose low pass filters, column 4 lines 10-15 discloses where the low pass filter image/pixels are subtracted from the original image creating the high pass filter image).

Lee et al and Komatsu does not teach that the filter is of sieve nature with the ability to process data of first and second dimensions and the mathematic nature of the filter to be

$$I_{ob}(x,y) = \frac{\sum I(i,j)}{N(x,y)}$$

However, Dewaele teaches regarding filter is of sieve (column 8 lines 10-40 discloses sieve filtering) nature with the ability to process data of first dimension (column 8 lines 10-40 discloses sieve filtering for the image of the first-dimension) and second dimensions (column 10 lines 30-60 disclose the two –dimensions grid of the sub images to be process) amd the mathematic nature of the filter to be

$$I_{ob}(x,y) = \frac{\sum I(i,j)}{N(x,y)}$$ (column 6 lines 60-67 to column 7 lines 1-35).

It would have been obvious to one skill in the art at the time of the invention to employ Dewaele teachings to Lee et al and Komatsu regarding sieve filters in the first and second dimensions. These are parameters that further enhance the image of interest.

The motivation to combine regarding sieve filters for first and second dimensions give the advantages of obtaining geometrically correct images (column 2 lines 10-20) and achieving better signal to noise ratios (column 6 lines 60-65).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tsung-Yin Tsai whose telephone number is (571) 270-1671. The examiner can normally be reached on Monday - Friday 8 am - 5 pm ESP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on (571) 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tsung-Yin Tsai
July 5, 2007

JINGGE WU
SUPERVISORY PATENT EXAMINER